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DISCOVERIES AND IMPROVEMENTS IN ARTS, MANUFACTURES, AND AGRICULTURE.

Specification of the patent granted to George Hudson, of the city of Edinburgh, North Britain, Ash-manufacturer; for a method of separating the alkaline salt from the acid, as it exists in the following substances; viz. kelp, black ashes, soapers' salts, spent leys, soda natron, rock salt, common salt, brine, sea water, caput mortuum of aquafortis, caput mortuum of oil of vitriol, and caput mortuum of salt used by bleachers.—

Dated October 8, 1810.

TO all to whom these presents shall come, &c. Now know ye, that the said George Hudson doth, by this instrument in writing, under his hand and seal duly executed, describe and ascertain the nature of his said invention, and the methods by which the same may be performed; that is to say; A ton of kelp is ground to [pieces of] the size of a walnut, and introduced into a vat or vats, with receivers under them, such as soap-boilers use. Water is then added, so as completely to cover it: after standing in that state twelve hours the plug at the bottom is partially taken out, and the saline fluid drawn off in the usual manner soap-boilers follow. One hundred and sixty gallons of the first running is to be reserved, in order to mix with the remainder of the saline matter, to make the whole obtained of equal strength when it is introduced into the evaporating pan. The kelp in the vat should be covered with water, and kept running until the saline matter be wholly obtained. This saline matter is to be put into evaporating pans, of a certain form, rather oval, each containing two hundred gallons, more or less: five hundred weight of well-burnt lime, slacked

and reduced to powder, then immersed in water, in order that the stones and gravel may subside, must be added to the saline matter, in proper proportions, to take in the whole of the saline matter, as it is introduced in the evaporating pans. Five hundred weight of charcoal, or cinders, or pit-coal, ground to dust, and afterwards put through a fine sieve, is also introduced into the evaporating pans, in proper proportions, along with the lime, and ten pounds of vegetable alkali, more or less, equally divided between the pans, which will accelerate the process. A strong fire is to be put under the pan, care being always taken that the fire is placed at a proper distance from the pan; and constant stirring must be employed until the lixivium begins to rise, which it will do in a similar manner to soap when boiling, and it must be treated by cooling as soap is, otherwise it will overflow the top of the pan. As the liquid evaporates, soft water must be added, until the acid is dispersed, which will be effected in proportion to the quantity of saline matter in the pan with kelp of medium quality. The operation is finished in twelve or fourteen hours. Care must be taken not to fill the pan too full, in order to give the fluid liberty to rise. Care must also be taken frequently to stir the bottom of the pan with an iron stirrer, made in length in proportion to the depth of the pan. When the acid is found to be evaporated, which may be known by a simple chemical process upon a tea-cup full of the fluid in the pan, the fire must be partially drawn, and kept moderate, until the moisture is wholly evaporated. The fire must then be removed, and

the substance in the pan stirred until it is cool, so as to prevent its adhering to the bottom of the pan. This substance is now in a state fit to be used by the soap-maker in the same way they use other ashes, by bruising it small, and mixing it with quick-lime, properly slacked. If a manufactory for preparing the ash for sale should be established, the substance must be put into a reverberating furnace, and such heat applied as to render it fluid; in which state it may be kept half an hour with a moderate fire. During the half hour when fluid it is to be frequently stirred with an iron rake, made for the purpose. It may be stirred in the dry state a few times before it becomes fluid. It is drawn out of the furnace, in a fluid state, into an iron pot, placed under the door of the furnace. When cool it comes out of the pot a solid mass, similar in appearance to barilla. The same mode of procedure must be followed with all the other substances in the patent. Those of them which contain earth in a state of combination as the kelp does, must be bruised quite small, and dissolved in soft water; common salt must be dissolved.

Another part of the process is to be conducted in a reverberating furnace; the kelp is to be bruised as the soap-makers now grind it for use, and five or six hundred weight of it is to be introduced into the furnace along with two hundred weight of black peat moss, or earth or moss made small, and moistened with water, or fire is to be applied, and with a proper iron rake is to be stirred frequently, until the peat moss is consumed, which will be in six or eight hours; it is then to be drawn out, and is fit for use. All the other substances in the patent must be treated in the same manner.

Specification of the patent granted to Joseph Bagnal, of Walsall, in the

county of Stafford, sadlers' ironmonger; for a method of making bridle-bits, snaffles, and bradoons for horses, Martingale hooks, and rings of iron, steel, or other metals.—Dated July 11, 1811.

To all to whom these presents shall come, &c. Now know ye, that in compliance with the said proviso, I the said Joseph Bagnal do declare that the nature of my said invention, and the manner in which the same is to be performed, is described and ascertained as follows; that is to say: By making the rings, sides, or checks of such bridle-bits, snaffles, bradoons, martingale hooks, rings, or other work, with an opening or division thereon, guarded and closed by moveable levers, slides, pins, catches, rollers, or springs, whereby the heads, reins, harness, leather or other work, may be fastened, put on, and taken off such bridle bits, snaffles, bradoons, hooks, and rings or other work, without buckles or billets, or unstitching the same, for convenience and utility of cleaning, fresh polishing or plating the said bits or iron-work, and cleaning the reins, harness, leather or other work, separate from each other; and for altering, changing, repairing, and preserving the same, as occasion or necessity may require.

Observations by the Patentee.

The mode hitherto followed, of having the bit or snaffle fastened to the leather of the bridle by means of a buckle, has been found both troublesome and inconvenient, when it has been necessary to change the leather, or to remove the bit from the leather, for the purpose of cleaning either one or both of them, and has not unfrequently been productive of danger to the rider, either from the failure of the buckle-tongue, or the breaking of the leather, which had been weakened for the purpose of